Stigmella auritella (Skala) (Lep.: Nepticulidae): A Species New to Britain

By A. M. Emmet*

Amongst the Nepticulidae in the W. H. B. Fletcher collection, now housed in the Department of Zoology, University of Cambridge, there is a series from Woodthorpe, Lincolnshire (a village five miles west of Maplethorpe) which were reared from an unspecified species of *Salix*. Fletcher had separated these specimens from his *Stigmella salicis* (Stainton) and labelled them *Nepticula diversa* Glitz: *S. diversa* is now regarded as a synonym of *S. obliquella* (Heinemann). The specimens certainly look different from *S. salicis*, but equally so from *S. obliquella*. They are small and dark and at first I wondered whether they might belong to *S. vimineticola* (Frey), a central and southern European species to which British specimens of *S. obliquella* were incorrectly ascribed by our older entomologists, but which, nevertheless, could ultimately be found in this country.

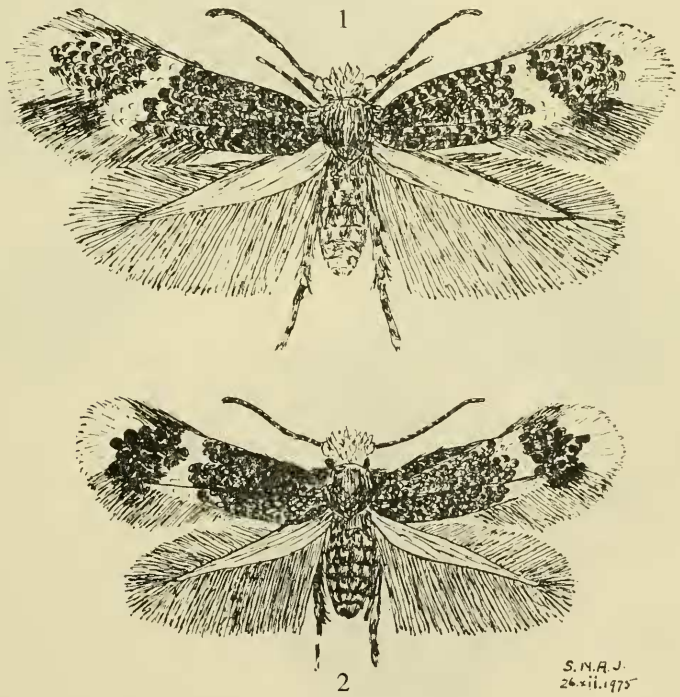


Fig. 1: *Stigmella salicis* Stainton.
Fig. 2: *Stigmella auritella* (Skala).

At my request, Dr. J. Smart sent some of the Fletcher specimens to Dr. J. Klimesch in Austria, who dissected the genitalia and gave his opinion that they were certainly not *S.*

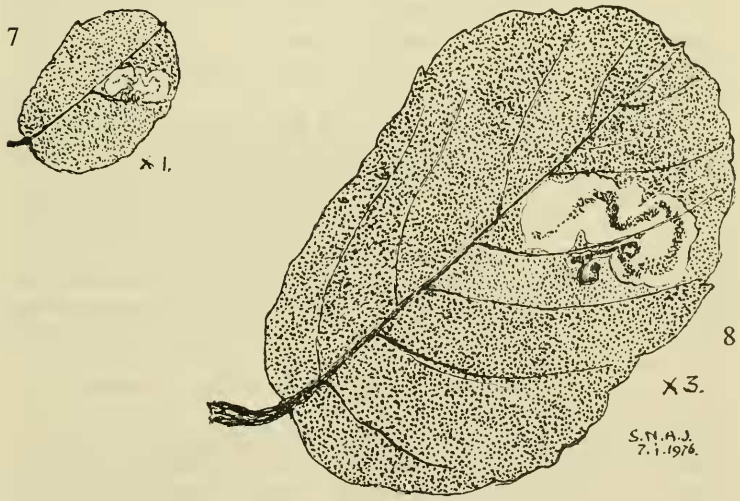
* Labrey Cottage, Victoria Gardens, Saffron Walden, Essex.

Figs. 3, 4: *Stigmella salicis* Stainton. Larval mines, natural size and enlarged.

Figs. 5, 6: *Stigmella auritella* (Skala). Multiple larval mines, natural size and enlarged.

vimineticola, but might be *Stigmella auritella* (Skala, 1932); however, he could not be certain, as the specimens had been damaged in transit.

If *S. auritella* did indeed occur in Britain, the best locality to search for it seemed to me to be the west of Ireland, where mines of a nepticulid I had hitherto supposed to be *S. salicis* occurred plentifully on *Salix aurita*. Accordingly, in July, 1974, when I was on holiday in Connemara, I collected a number of these mines at Ballynahinch and bred 25 adults during the ensuing month. The imagines resembled those in the Fletcher collection. Compared with specimens of *S. salicis* bred from *Salix caprea* and *S. cinerea* in England, they are smaller and the wings appear relatively longer and narrower. Whereas in *S. salicis* the basal area of the forewing is yellowish fuscous, the apical area dark purplish fuscous and the intervening fascia broad and yellowish, in the Irish specimens base and apex alike are dark fuscous, completely or virtually without any purplish tinge and the narrower fascia is composed of pale, almost colourless scales. In *S. salicis* the terminal cilia of the forewings are creamy white; in the Irish specimens they are silvery white. *S. salicis* has the hindwing and its cilia yellowish grey, whereas in the Irish specimens these are pale grey without the yellowish tinge. In short, the Irish specimens are smaller, more slender and with a more marked contrast between their dark and pale scaling.



Figs. 7, 8: *Stigmella auritella* (Skala). Solitary larval mine, natural size and enlarged.

In life history,too, there are differences to be observed. The mines of *S. salicis* are usually (not always) solitary and the mined leaves are to be found most commonly between 4 and 7 feet from the ground. The Irish species on *Salix aurita* is much more gregarious, as many as four mines sometimes being

present in quite small leaves. Low bushes are preferred, most mines occurring within a foot or so of the ground and many on dwarf bushes half buried in the grass. The mines also tend to be smaller and more compact; their colour is discussed below.

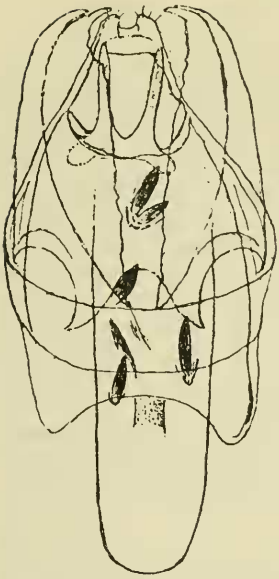
During December, 1974, Mr. E. S. Bradford kindly made genitalia dissections of three males and two females from the Irish material and of a similar number of typical English *S. salicis*. No differences were to be observed between the female genitalia, but with the males there was a clear divergence in the arrangement of cornuti on the aedeagus which was constant for the two groups; furthermore, the genitalia of the Irish specimens were distinctly smaller. After making drawings of all six male genitalia, Mr. Bradford declared himself convinced that there were two species.

Accordingly we sent the dissected specimens, together with their genitalia preparations and Mr. Bradford's drawings as well as additional specimens which had not been dissected, to Dr. Klimesch. He replied as follows: —

"Your *S. salicis* (Stainton) agree perfectly with my specimens bred from *Salix caprea*.

"The genitalia of your material bred from *Salix aurita* from Ballynahinch does not differ from our specimens bred from *Salix aurita*. It is right, the Irish specimens are smaller and several ones have relatively narrower wings than those from Austria. Nevertheless, I am of the opinion that all examples belong to the same form = *auritella*. The most characteristic feature of the genitalia seems to me the 'Cornutal plate' which is missing in *salicis*. The study of numerous *auritella* material confirms my opinion that the hitherto problematic *auritella* is indeed a good species."

Professor Hering (1957) in his key to the leaf-mines on *Salix* separates the mine of *S. auritella* from that of *S. salicis* by the colour of the frass, which he declares to be reddish in the former and black in the latter. This was a matter for concern, since the frass in my supposed *S. auritella* mines was black and did not differ in this respect from that in my *S. salicis* mines. Accordingly, I consulted the Hering herbarium at the British Museum (Natural History) and studied the type material mines of *S. auritella*, collected by Skala himself. In these, too, the frass was black like that of *S. salicis*. I drew Dr. Klimesch's attention to this point and he replied, "Hering's statement that the frass of the *auritella* larva is red-brown does not seem to be a characteristic feature of this species. Evidently the colour of the frass changes under the influence of the weather (sun and moisture) as we can observe in the mines of many species." I also consulted Skala's original reference (Skala, 1932), where I found that he described the mines on *Salix aurita* as being less variable, paler and lighter brown than those of *S. salicis* on *Salix caprea*; he did not make any mention of the colour of the frass. His description matches my Irish mines well, for they too are more brownish than the mines of *S. salicis*. It is possible that Hering inadvertently tranferred the epithet "reddish" from the mine to the frass.



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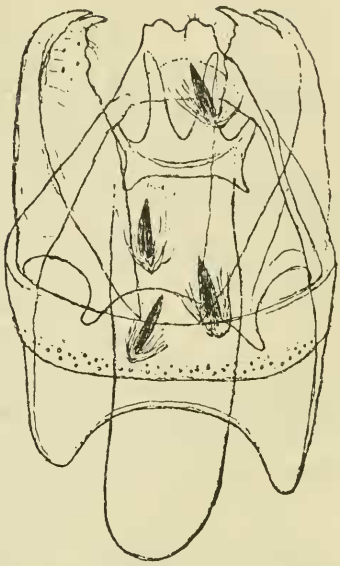

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Fig. 9: Male genitalia of *Stigmella auritella* (Skala).
Fig. 10: Male genitalia of *Stigmella salicis* Stainton.

Though at present *S. auritella* is recorded with certainty only from Co. Galway, it probably also occurs freely in Britain wherever its foodplant is common. This is likely to apply in particular to Scotland, Wales and the western parts of England. In all these areas I have observed vacated mines with the characteristics of *S. auritella*.

My thanks are due to Dr. Klimesch for his advice, to Mr. Bradford for the preparations and drawings of the genitalia and to Mr. S. N. A. Jacobs for his figures of the mines and adults.

Summary

Stigmella auritella (Skala, 1932) is added to the British List on the evidence of Irish specimens bred from *Salix aurita* L. The mine and imago are compared with those of *Stigmella salicis* (Stainton, 1854).

References

Hering, E. M., 1957. *Bestimmungstabellen der Blattminen von Europa.* 's-Gravenhage.

Skala, H., 1932. Zur Falterfauna des oberen Muhlviertels. *Kranch. ent. Jahrb.*, **42**: 101-107.